Amendments to the Specification

Please delete paragraphs **[0024]**, **[0025]**, **[0026]** and **[0027]** of the specification, as numbered in the pre-grant publication of the instant application.

Please amend the specification as follows. Paragraph numbers correspond to those in the pre-grant publication of the specification.

[0138] To determine the direct effect of $1\alpha,25\text{-}(OH)_2\text{-}D_3$ on adipocyte Ca^{2+} signaling, the $[Ca^{2+}]i$ response to $1\alpha,25\text{-}(OH)_2\text{-}D_3$ was evaluated. ~~FIGS. 12A-B demonstrates that~~ $1\alpha,25\text{-}(OH)_2\text{-}D_3$ induced a significant increase of $[Ca^{2+}]i$ in human adipocyte in a dose-dependent manner ($p<0.05$). This action was mimicked by $1\alpha,25$-dihydroxylumisterol$_3$ ($1\alpha,25\text{-}(OH)_2$-lumisterol$_3$), a specific agonist for membrane vitamin D receptor (mVDR). $1\alpha,25\text{-}(OH)_2$-lumisterol$_3$ caused marked dose-responsive increases in human adipocyte $[Ca^{2+}]i$ ($p<0.05$~~, FIGS. 12C-D~~), while these effects were completely prevented by pre-treatment of human adipocytes with $1\beta,25$-dihydroxyvitamin D_3 ($1\beta,25\text{-}(OH)_2\text{-}D_3$), a specific antagonist for mVDR ~~(FIGS. 12E-F)~~.

[0139] To investigate the role of $1\alpha,25\text{-}(OH)_2\text{-}D_3$ in regulating

lipid metabolism, we treated human adipocytes with 1α,25-$(OH)_2$-D_3 and its mVDR agonist and antagonist, using FAS and GPDH as lipogenic markers and glycerol release as a lipolytic indicator. 1α,25-$(OH)_2$-D_3 (5 nM) caused a 40% increase in adipocyte FAS activity over 48 hrs ($p<0.05$~~, FIG. 13A~~), while 1α,25-$(OH)_2$-lumisterol$_3$ exerted a more potent effect, with a 2.5 fold increase in FAS activity ($p<0.001$~~, FIG. 13A~~). However, pretreatment of human adipocytes with 1β,25-$(OH)_2$-D_3 completely prevented this stimulation of FAS ~~(FIG. 13A)~~. A similar stimulation was observed on FAS mRNA expression, with 2 and 2.5 fold increases on 1α,25-$(OH)_2$-D_3 and 1α,25-$(OH)_2$-lumisterol$_3$ treatment ($p<0.001$~~, FIG. 13B~~), respectively, while this stimulation was completely blocked by 1β,25-$(OH)_2$-D_3. Consistent with this, 1α,25-$(OH)_2$-D_3 (5 nM) stimulated a 50% increase in human adipocyte GPDH activity ($p<0.05$~~, FIG. 14~~), while a markedly greater stimulation of 2.8 fold was found with 1α,25-$(OH)_2$-lumisterol$_3$ treatment ($p<0.001$~~, FIG. 14~~). Although 1β,25-$(OH)_2$-D_3 exerted little effect on 1α,25-$(OH)_2$-D_3 stimulated GPDH activity, it markedly inhibited 1α,25-$(OH)_2$-lumisterol$_3$ stimulated GPDH activity ~~(FIG. 14)~~.

[0140] Adipocyte lipolysis responded to 1α,25-$(OH)_2$-D_3 and its agonist in an inverse manner to the lipogenesis. ~~FIG. 15A~~

~~illustrates that~~ 1α,25-$(OH)_2$-D_3 exerted a inhibitory effect on adipocyte basal lipolysis, with a 35% reduction ($p<0.05$). A greater inhibition of 50% was found with 1α,25-$(OH)_2$-$lumisterol_3$ treatment ($p<0.01$~~, FIG. 15A~~). Conversely, this inhibition was completely prevented by pretreatment with 1β,25-$(OH)_2$-D_3. Similarly, treatment of human adipocytes with isoproterenol resulted in a 3.2 fold increase in lipolysis ($p<0.001$~~, FIG. 15B~~), while 1α,25-(OH)[[2]]$_2$-D_3 and 1α,25-$(OH)_2$-$lumisterol_3$ inhibited isoproterenol-stimulated lipolysis by 56% and 53% ($p<0.001$~~, FIG. 15B~~), respectively. Pretreatment with 1α,25-$(OH)_2$-D_3 prevented this inhibitory effect of 1α,25-$(OH)_2$-D_3 and 1[[α]]β,25-$(OH)_2$-$lumisterol_3$ on isoproterenol-stimulated lipolysis ~~(FIG. 15B)~~.